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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,510	09/03/2004	Teruo Amoh	50395-279	3062
20277	7590	03/21/2007	EXAMINER	
MCDERMOTT WILL & EMERY LLP 600 13TH STREET, N.W. WASHINGTON, DC 20005-3096			NGO, NGAN V	
			ART UNIT	PAPER NUMBER
			2818	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/506,510	AMOH ET AL.	
	Examiner Ngan Ngo	Art Unit 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 26 February 2007.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-10 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-10 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
     Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
     Paper No(s)/Mail Date. \_\_\_\_\_
- 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

The amendment filed February 26, 2007 has been entered and made of record as paper no. 0207.

Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The "surface roughness, Ra, of at most 0.18 µm before the solder layer is melted" as disclosed by the specification. The surface roughness, Ra, of at most 0.18 µm in the final structure is not disclosed by the specification.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 and 6-8 insofar as understood are rejected under 35 U.S.C. 103(a) as being unpatentable over Slater, Jr. et al (US 2003/0015721 A1) in view of Shizuki et al (US 5,914,536).

Slater, Jr. et al discloses a submount comprising a submount substrate (75), a solder layer (80) formed on the top surface of the submount substrate, and a semiconductor light-emitting device (100) mounted on the solder layer. Note paragraph [0061] of Slater. Shizuki further teaches that the surface roughness of the solder layer is

less than 0.18  $\mu\text{m}$ . Note lines 55-58, column 9 of Shizuki et al. Therefore it would have been obvious to one of ordinary skill in the art to use the teachings of Shizuki to form a surface roughness of the solder layer being less than 0.18  $\mu\text{m}$  in Slater's device

In re claim 6-8, Slater discloses the barrier layer (35).

Claims 5 and 10 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Slater,Jr. et al (US 2003/0015721 A1) in view of of Shizuki et al (US 5,914,536) and further in view of Hikasa et al (US 5770821) and Kitaoka et al (US 2001/0053167 A1).

Slater and Shizuki disclose all the subject matter discussed above. Hikasa further teaches that the top surface of the submount substrate is less than 0.10  $\mu\text{m}$ . Note lines 61-63, column 5 of Hikasa. Kitaoka et al further teaches that the submount is formed of AlN. Note paragraph [0105]. Therefore, it would have been obvious to one of ordinary skill in the art to use the teachings of Slater, Shizuki, Hikasa and Kitaoka to form the claimed structure.

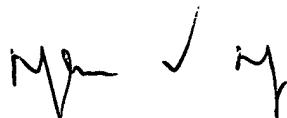
Applicant's arguments filed February 26, 2007 have been fully considered but they are not persuasive.

In response to Applicant's arguments on page 6, the claimed device is a final product, not an intermediate product as argued.

The other references are cited to show other structures pertinent to Applicant's disclosure. All of these references disclose the surface roughness of the solder layer being less than 0.18  $\mu\text{m}$ .

Any inquiry concerning this communication should be directed to Examiner Ngan Ngo at telephone number (571) 272-1711. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ngan Van Ngo  
Primary Examiner

Ngan Ngo

March 15, 2007